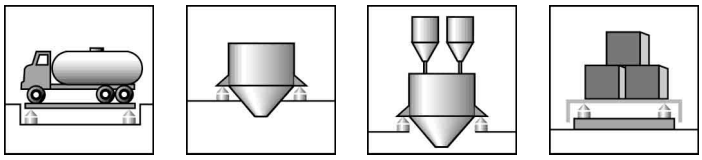
Data Sheet

# RTN...

## Load cells

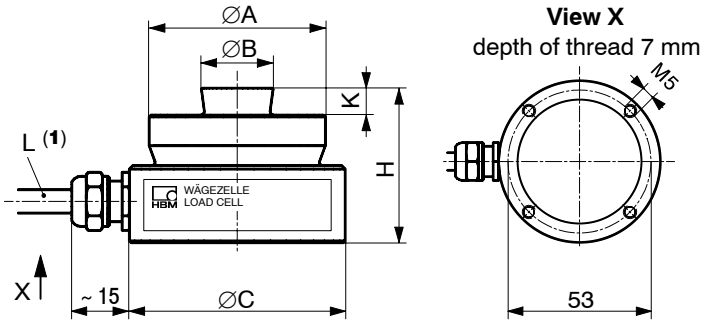
### Special features

- **Low construction**
- **Max. capacities: 1 t ... 470 t**
- **Legal for trade according to OIML**
- **Stainless steel**
- **Protection class IP 68**
- **High output signal of 2.85 mV/V**
- **Input resistance ≥4350 Ω**
- **Explosion proof versions according to ATEX (Option)**

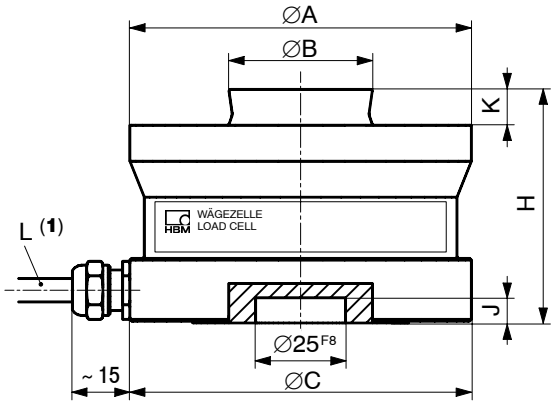


Dimensions (in mm; 1 mm= 0.03937 inches)

**RTN... / ≤4,7 t**




**RTN... / 10 t ... 470 t**




| RTN... | 1 t | 2.2 t | 4.7 t | 10 t | 15 t | 22 t | 33 t | 47 t | 68 t | 100 t | 150 t | 220 t | 330 t | 470 t |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ØA** | 49 | 49 | 49 | 74 | 75 | 75 | 95 | 130 | 130 | 150 | 150 | 225 | 225 | 270 |
| **ØB** | 20 | 20 | 20 | 30 | 30 | 30 | 40 | 60 | 60 | 70 | 70 | 100 | 100 | 120 |
| **ØC** | 60 | 60 | 60 | 75 | 75 | 75 | 95 | 130 | 130 | 150 | 150 | 225 | 225 | 270 |
| **H** | 43 | 43 | 43 | 50 | 50 | 50 | 65 | 75 | 85 | 90 | 100 | 130 | 145 | 170 |
| **J** | – | – | – | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 10 | 10 | 10 |
| **K** | 7.5 | 7.5 | 7.5 | 6.5 | 6.5 | 6.5 | 10 | 14 | 14 | 16 | 16 | 24 | 24 | 28 |
| **L** | 5 m | 5 m | 5 m | 5 m | 5 m | 12 m | 15 m | 12 m | 12 m | 12 m | 5 m | 5 m | 5 m | 5 m |

(1) L = Cable length

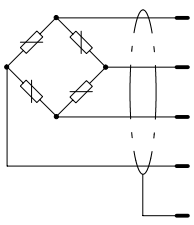
## Specifications

| Type | | RTN 0,05 | RTN C3 |
|---|---|---|---|
| **Nominal (rated) load ($E_{max}$)** | | **1 t ... 470 t** | |
| **Accuracy class** | | 0.05 | C3 (OIML R60) |
| **Maximum number of load cell intervals ($n_{LC}$)** | | - | 3000 |
| **Minimum LC verification interval ($v_{min}$)** | % of $E_{max}$ | - | 0.005 (= $E_{max}$ / 20000) |
| **Sensitivity ($C_n$)** | mV/V | 2.85 ±0.1 % | |
| **Temperature effect on sensitivity ($TK_C$)** | % of $C_n$ / 10 K | ±0.05 | ±0.008[1)] |
| **Temperature effect on zero balance ($TK_0$)** | | ±0.03 | ±0.007 |
| **Hysteresis error ($d_{hy}$)** | % of $C_n$ | 0.05 | 0.02[1)] |
| **Non-linearity ($d_{lin}$)** | | 0.05 | 0.02[1)] |
| **Creep ($d_{cr}$) over 30 min.** | | ±0.03 | ±0.017 |
| **Input resistance ($R_{LC}$)** | Ω | 4450 ±100 | |
| **Output resistance ($R_0$)** | | 4010 ±2 | 4010 ±0.5 |
| **Reference excitation voltage ($U_{ref}$)** | V | 5 | |
| **Nominal range of excitation voltage ($B_U$)** | | 5 ... 30 (max. 60) | |
| **Carrier frequency of the excitation voltage** | Hz | < 600 | |
| **Insulation resistance ($R_{is}$)** | GΩ | > 20 | |
| **Nominal temperature range ($B_T$)** | °C [°F] | -10 ... +40 [+14 ... +104] | |
| **Service temperature range ($B_{tu}$)**<br>**• Load cell RTN**<br>**• Accessory: VEN**<br>**VPN** | | -30 ... +80 [-22 ... +176] (Option: up to +110 °C / +230 °F)<br>-30 ... +80 [-22 ... +176]<br>-30 ... +110 [-22 ... +230] | |
| **Storage temperature range ($B_{tl}$)** | | -50 ... +85 [-58 ... +185] | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Nominal (rated) load ($E_{max}$)** | t | 1 | 2.2 | 4.7 | 10 | 15 | 22 | 33 | 47 | 68 | 100 | 150 | 220 | 330 | 470 |
| **Weight (G), approx.** | kg | 0.6 | 0.6 | 0.7 | 1.2 | 1.3 | 1.3 | 2.1 | 4.3 | 4.8 | 7.0 | 8.6 | 22 | 29 | 50 |
| **Safe load limit ($E_L$)** | t | 1.7 | 3.8 | 8 | 17 | 25 | 38 | 56 | 80 | 115 | 170 | 250 | 380 | 500 | 700 |
| **Breaking load ($E_d$)** | | 4 | 9 | 19 | 40 | 60 | 88 | 130 | 190 | 270 | 400 | 600 | 770 | 1100 | 1500 |
| **Permissible static side load ($L_q$)** | | 0.5 ($E_{max}$ - 0.8 $L_z$), but no higher than $L_{q\,max}$ = 0.3 $E_{max}$<br>$E_{max}$ = Nominal (rated) load; $L_z$ = load in measuring direction | | | | | | | | | | | | | |
| **Permissible dynamic load ($F_{srel}$) (vibration amplitude according to DIN 50100)** | % of $E_{max}$ | 70 | | | | | | | | | | | | | |
| **Deflection at $E_{max}$ ($s_{nom}$), approx.** | mm | 0.13 | 0.12 | 0.12 | 0.17 | 0.18 | 0.21 | 0.25 | 0.33 | 0.35 | 0.45 | 0.57 | 0.67 | 0.85 | 1.00 |
| **Protection class to EN60529 (IEC529)** | | IP 68 | | | | | | | | | | | | | |
| **Material: Measuring element**<br>**Cable fitting**<br>**Cable-sheath** | | Stainless steel<br>Brass, nickel plated / Sealing: CR/NBR<br>Special silikon, RAL 7000 (grey), ∅6.5 mm | | | | | | | | | | | | | |

1) The data for Non-linearity ($d_{lin}$), Hysteresis error ($d_{hy}$) and Temperature effect on sensitivity ($TK_C$) are typical values. The sum of these data meets the requirements according to OIML R60.

**Wiring code RTN...**



| | |
|---|---|
| (black) | Excitation (+) |
| (red) | Signal (+) |
| (blue) | Excitation (-) |
| (white) | Signal (-) |
| (green-yellow) | Shield |

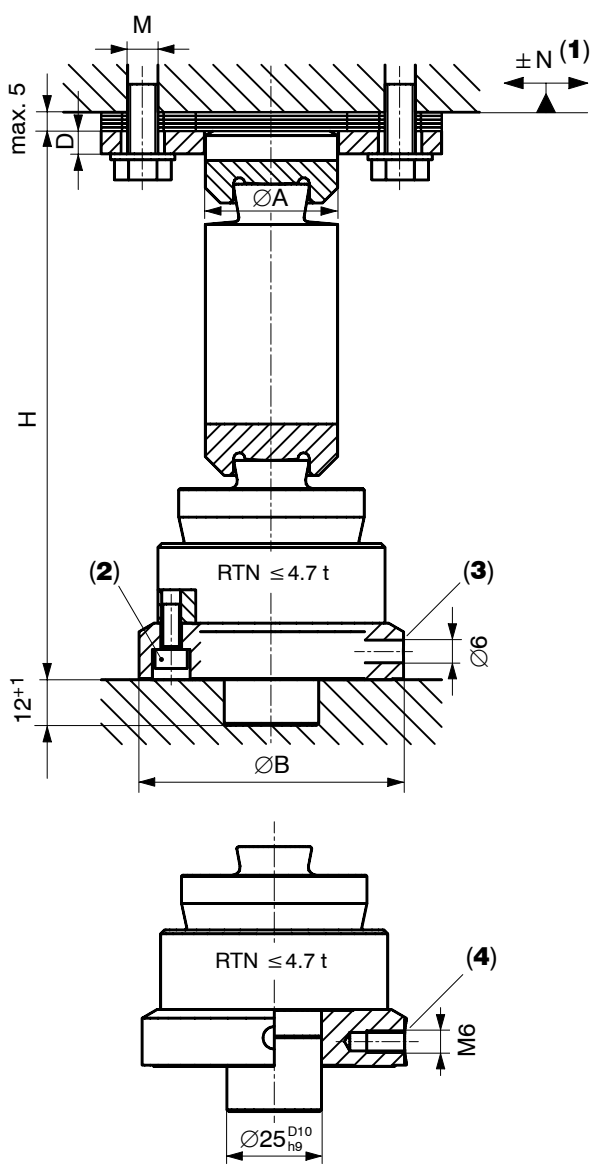
## Available Options:

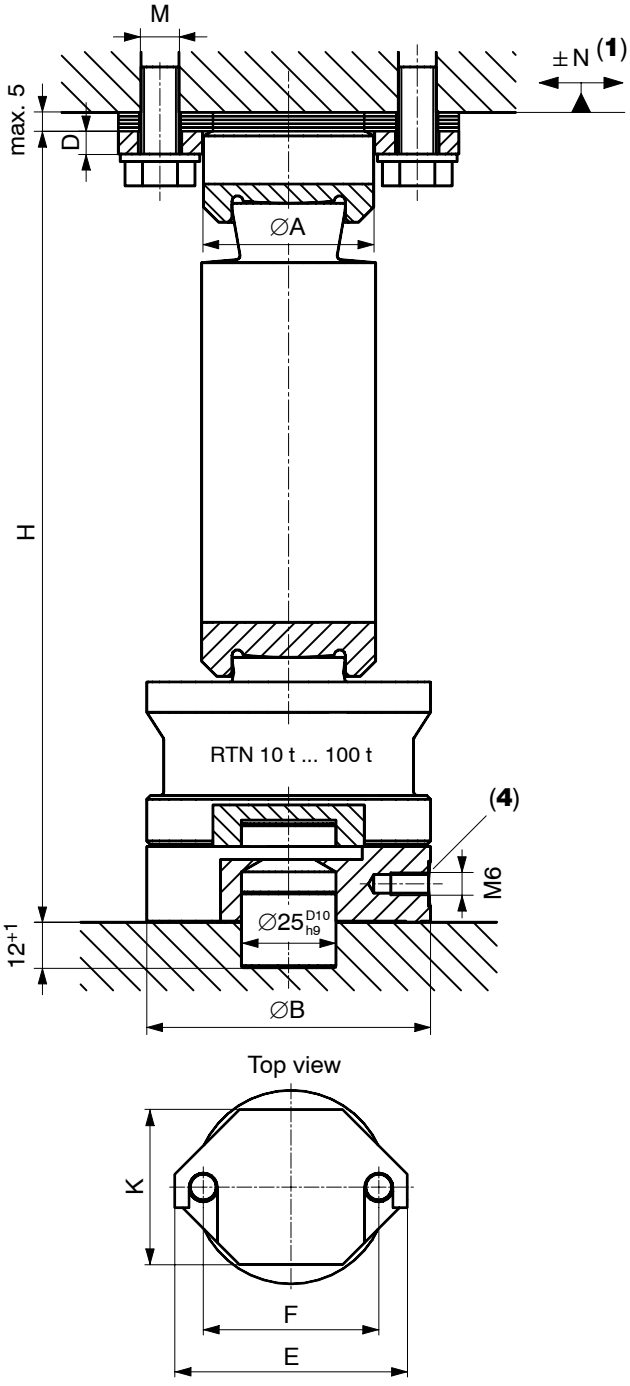
- **Explosion-proof versions according to ATEX:** II 2 G EEx ia IIC T4 resp. T6 (Zone 1) *)
  II 3 G EEx nA II T6 (Zone 2)
  II 2 D IP68 T80 °C (Zone 21) *)
  II 3 D IP68 T80 °C (Zone 22 for non-conductive dust)
  *) with EC-Type Examination Certificate

- **Service temperature range up to +110 °C** (not possible in connection with ATEX and / or Elastomer mounts VEN)

## **Accessory: Pendulum mounts VPN** (Dimensions in mm; 1 mm = 0.03937 inches)

**RTN/...T/VPN** (Pendulum mounts for Load cells RTN... / 1 t ... 100 t)
Material: Stainless steel




(**1**) = Permissible play

(**2**) = 4 Screws M5x12 DIN 912; Torque: 4 N·m

(**3**) = Bore hole for ventilation

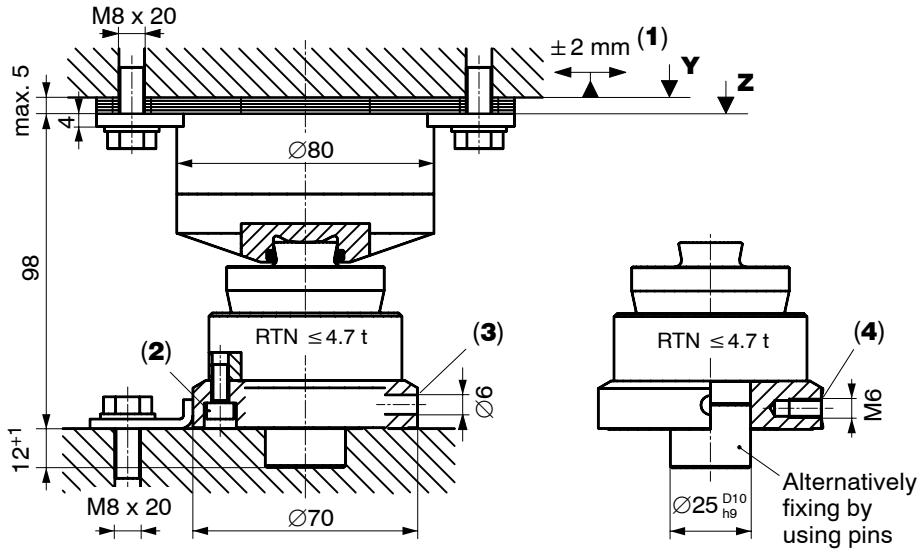
(**4**) = Earthing connection

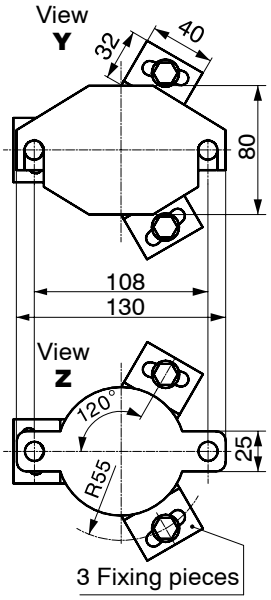
| **Type** ($E_{max}$ Load cell) | **∅A** | **∅B** | **D** | **E** | **F** | **H** | **K** | **M** | **N** |
|---|---|---|---|---|---|---|---|---|---|
| **RTN/2.2T/VPN** (1 t + 2.2 t) | 35 | 70 | 6 | 90 | 68 | 128 | 60 | M8 x 20 | 3.5 |
| **RTN/4.7T/VPN** (4.7 t) | 35 | 70 | 6 | 90 | 68 | 145 | 60 | M8 x 20 | 3.5 |
| **RTN/10T/VPN** (10 t) | 45 | 75 | 6 | 90 | 68 | 165 | 60 | M10 x 25 | 3.5 |
| **RTN/15T/VPN** (15 t) | 45 | 75 | 6 | 90 | 68 | 175 | 60 | M10 x 25 | 4 |
| **RTN/22T/VPN** (22 t) | 45 | 75 | 6 | 90 | 68 | 229 | 60 | M10 x 25 | 7 |
| **RTN/33T/VPN** (33 t) | 58 | 95 | 6 | 120 | 90 | 272 | 80 | M12 x 25 | 7 |
| **RTN/47T/VPN** (47 t) | 85 | 130 | 10 | 170 | 130 | 295 | 110 | M16 x 30 | 6 |
| **RTN/68T/VPN** (68 t) | 85 | 130 | 10 | 170 | 130 | 337 | 110 | M16 x 30 | 7 |
| **RTN/100T/VPN** (100 t) | 100 | 150 | 10 | 180 | 140 | 371 | 130 | M16 x 30 | 8 |

## Accessory: Elastomer mounts VEN (Dimensions in mm; 1 mm = 0.03937 inches)

### RTN/2.2T/VEN + RTN/4.7T/VEN (Elastomer mounts for Load cells RTN... / ≤ 4.7 t)

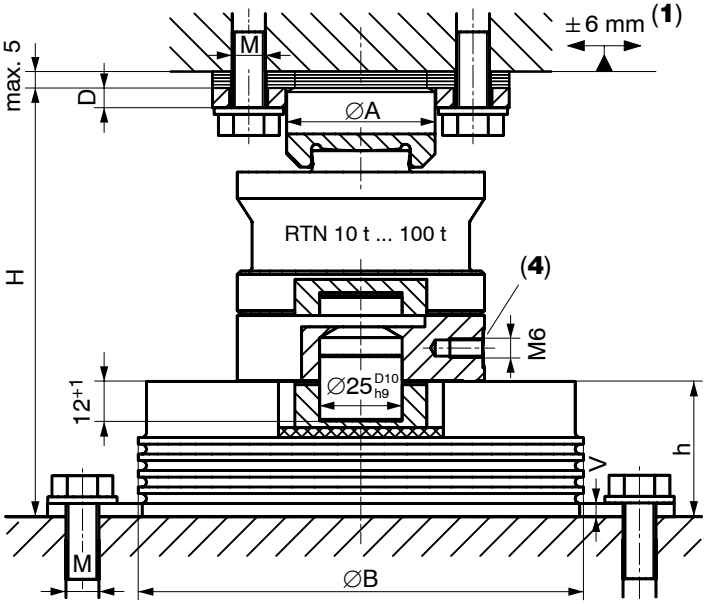
Material: Stainless steel; Elastomer = Neoprene (chlorine butadiene rubber)
Deflection <0.8 mm (at 4.7 t)

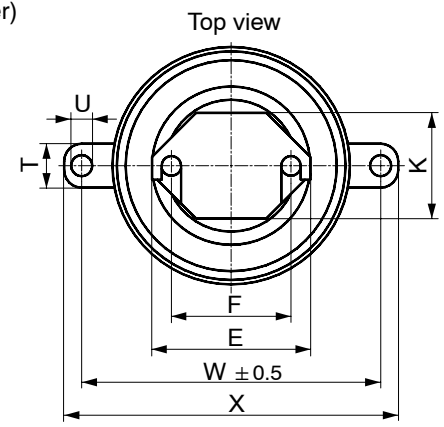



### RTN/...T/VEN (Elastomer mounts for Load cells RTN... / 10 t ... 100 t)*

Material: Galvanized steel; Elastomer = Neoprene (chlorine butadiene rubber)




(**1**) = Permissible play
(**2**) = 4 Screws M5x12 DIN 912; Torque: 4 N·m
(**3**) = Bore hole for ventilation
(**4**) = Earthing connection

| **Type** ($E_{max}$ Load cell) | **Deflection** | **ØA** | **ØB** | **D** | **E** | **F** | **H** | **h** | **K** | **M** | **T** | **ØU** | **V** | **W** ± 0.5 | **X** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RTN/22T/VENR** (10 t ... 22 t) Stainless steel | 0.5 (at 22 t) | 45 | 135 | 6 | 90 | 68 | 130 | 41 | 60 | M10x25 | 25 | 12 | 4 | 170 | 190 |
| **RTN/22T/VEN** (10 t ... 22 t) | 0.5 (at 22 t) | 45 | 135 | 6 | 90 | 68 | 130 | 41 | 60 | M10x25 | 25 | 12 | 4 | 170 | 190 |
| **RTN/33T/VEN** (33 t) | 0.8 | 58 | 175 | 6 | 120 | 90 | 168 | 56 | 80 | M12x25 | 30 | 17 | 6 | 250 | 280 |
| **RTN/47T/VEN** (47 t) | 0.5 | 85 | 250 | 10 | 170 | 130 | 198 | 63 | 110 | M16x30 | 40 | 21 | 8 | 310 | 350 |
| **RTN/68T/VEN** (68 t) | 0.7 | 85 | 250 | 10 | 170 | 130 | 220 | 63 | 110 | M16x30 | 40 | 21 | 8 | 310 | 350 |
| **RTN/100T/VEN** (100 t) | 0.6 | 100 | 300 | 10 | 180 | 140 | 239 | 68 | 130 | M16x30 | 40 | 21 | 8 | 360 | 400 |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